The Strategic Assessment Model (SAM)

The APPA Strategic Assessment Model is an essential tool that can be used to achieve organizational excellence through continuous improvement. SAM enables the facilities professional to assess an organization's financial performance, the effectiveness of its primary processes, the readiness of its employees to embrace the challenges of the future, and its ability to serve its customers.

The Strategic Assessment Model utilizes data to create performance indicators that are indicative of overall organizational aptitude. Participants complete a survey, which then allows them to compare the performance of their institution against that of others. An organization can utilize the information to initiate a benchmarking process, for self improvement, or as a method of peer comparison. These endeavors can then produce more efficient organizational performance, in turn leading to added value for an institution.

- **The SAM Update**
- **The SAM Matrix**
- **Performance Indicators**
  - Financial Perspective
  - Internal Process Perspective
  - Innovation and Learning Perspective
  - Customer Perspective
- **SAM Tools:**
  - Work Climate Survey
    - Work Climate Survey Guidelines
- **SAM Trends for the Profession**
An Update On APPA's Strategic Assessment Model

by Maggie Kinnaman
Chair, SAM Task Force

In late 1999, the Strategic Assessment Model (SAM) was made accessible to you via the APPA WEB site. Much has been accomplished and I’d like to share those accomplishments and future plans with you. But before we get started let's take a moment to revisit the original charge from the APPA Board to the SAM Task Force. The charge was articulated as establishing an inventory of reliable and meaningful performance indicators that would greatly increase the credibility of the facilities management professional, while providing stewardship over his/her institution’s greatest and most costly resource.

SAM Defined
The SAM Task force responded to the charge by defining the Strategic Assessment Model as follows:

The APPA Strategic Assessment Model, referred to as SAM, is an essential tool that can be used to achieve organizational excellence through continuous improvement. SAM enables the facilities professional to assess an organization's financial performance, the effectiveness of its primary processes, the readiness of its employees to embrace the challenges of the future, and its ability to delight customers. The facilities professional can utilize the model for self-improvement, peer comparison, or benchmarking. Think of SAM as your vehicle that takes you on a journey from today's realities to future excellence.

In a nutshell, SAM consists of two components, a data collection piece and a self assessment tool that allows an institution to self rate using a qualitative scale, rating organizational effectiveness 1 through 5. We believe that by using the combination of trending quantitative performance indicators and the qualitative criteria for determining levels of organizational effectiveness, SAM has become a strategic tool. SAM can help an institution determine its current level of organizational effectiveness, recognize what is required to move to the next level, and develop strategies and action plans for improving in each of the scorecard perspectives.

SAM provides facilities managers with a tool that helps to get the attention of and bridge the communication gap that often exists between the facility manager and our campus decision makers. The model helps to tell the facilities story in the language of business by collecting data in such a way that an institution can see at a glance how their facilities performance fares with the performance of others within the profession.

PROJECT SUCCESS, DEFINED
In 1999 the Task Force identified four measures of success for this project. Keep these in mind as you read through the accomplishments and see how we’ve fared. The measures are:

- The identification of ranges of performance for the facilities profession through use of the model's performance indicators.
- SAM becomes a critical and credible tool that can track facilities effectiveness over time.
- The identification of performance indicators that can serve as a platform for initiating a process of benchmarking.
- SAM is fully integrated with other APPA programs.

WHAT HAS BEEN ACCOMPLISHED
The model was updated in 2000 and rolled out at the APPA Annual Meeting in Fort Worth, Texas. Preliminary 1999 survey results were made available to our members during that presentation. Final results of the 1999 survey were sent to participants in the fall of 2000. During the fall of 2000, SAM presentations were made to every Region to include Australasia (AAPPA) and our strategic alliance partners in the United Kingdom (AUDE).

In early 2001 SAM presentations were made to the Council for Higher Education Management Associations (CHEMA). CHEMA is an umbrella organization of 34 associations within Higher Education administration. The 2nd Edition SAM Publication was made available to our members during the APPA
Annual Meeting held in Montreal, Canada in the summer of 2001. This publication not only explained the details of the model, it captured numerous case studies from members currently using SAM in some form. These case studies included representation from Australia and the United Kingdom. Also during the Annual Meeting in Montreal, a SAM implementation presentation was rolled out to over 80 attendees.

With the SAM Task Force having substantially completed its charge, the Task Force structure was abandoned and the group realigned as a sub-committee under the purview of the APPA Information Services Committee. This alignment has proven quite useful and will help APPA consolidate its data collection efforts.

SAM Committee members also were invited to present at a Western States NACUBO meeting in the fall of 2001. What an honor for facilities folks to present to our higher education business officers.

Currently we are working with Prism Computer Corporation to develop a WEB based survey instrument that will be used to roll out a 2002 survey to our members in the summer of 2002. The WEB survey format will allow members to input data directly through the WEB and obtain instantaneous, preliminary WEB survey results. In this world of instant gratification, this is just what the doctor ordered.

Another very remarkable thing is happening. The Balanced Scorecard concept, embraced within the SAM model, is being applied to APPA's Educational Forum, the Facilities Management Evaluation Program and the Award for Excellence. Could we be moving toward program alignment within our Association of Choice?

Finally, we will be discussing our SAM presentation for the upcoming Educational Forum in Phoenix, Arizona as well as the feasibility of creating a SAM Implementation Handbook.

So, I'll ask you the question. Given our 1999 picture of success, how are we doing and what do you see as our opportunities for the future?

So in closing, don't forget to do two things. First, obtain a copy of the new SAM publication and second mark your calendars for the summer of 2002 and the new WEB based SAM survey.
## APPA's STRATEGIC ASSESSMENT MODEL - THE SAM MATRIX

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<td>5 PLATINUM</td>
<td>A sound, systematic data collection, evaluation, and refinement program has been fully established that accomplishes overall scorecard perspective objectives. A strong fact-based improvement process is fully in place for all primary areas. Work centers throughout the organization are conducting very effective improvement programs. Emphasis is placed on refinement of previous improvements to make them even better. Cycles of improvement demonstrate a mature program of continuous improvements and refinements in all areas and have been sustained over several years. Current performance is excellent for most primary areas. No adverse trends are noted. Most trends and/or service levels are evaluated against relevant comparisons or benchmarks from other similar institutions. Some are benchmarked with outside industries. Results show areas of leadership with excellent relative performance levels throughout the organization.</td>
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<tr>
<td>4 GOLD</td>
<td>A sound, systematic data collection, evaluation, and refinement program has been established that documents results in satisfying scorecard perspective objectives. A fact-based improvement process is in place for all primary areas. Cycles of improvement demonstrate a mature program of incremental improvements and refinements in making previous improvements even better. Performance trends show cycles of improvement in many to most primary areas. Most improvement trends and/or performance levels are sustained over cycles of data collection. Current performance is good to excellent for most areas. No adverse trends are noted. Most trends and/or service levels are evaluated against relevant comparisons or benchmarks from similar institutions. Results show areas of leadership with very good relative performance levels.</td>
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<tr>
<td>3 SILVER</td>
<td>A sound, systematic program has been established to examine scorecard perspective objectives. A fact-based improvement process is in place for most primary areas. Emphasis is placed more on improvement than on reacting to problems. Improvements can be measured and substantiated. Performance trends show improvement in many to most primary areas. No adverse trends are noted. Some trends and/or performance levels are evaluated against relevant comparisons from similar institutions. Results show areas of strength with good to very good relative performance levels.</td>
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<tr>
<td>2 BRONZE</td>
<td>Beginnings of a systematic program to satisfy scorecard perspective objectives. Major gaps exist in deployment. Early stages of transition from reacting to problems to a general improvement orientation are evident with noted results. Trends show some improvements and/or good performance levels are noted in a few areas. Results not recorded for many to most areas of importance.</td>
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<td>No systematic program evident. Only anecdotal information is available on how scorecard perspective objectives are being satisfied.</td>
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**APPA's Strategic Assessment Model**, referred to as SAM, is an essential tool that can be used to achieve organizational excellence through continuous improvement. SAM enables the facilities professional to assess an organization's financial performance, the effectiveness of its primary processes, the readiness of employees to embrace the challenges of the future, and the ability to delight customers. The facilities professional can utilize the model for self-improvement, peer comparison, and benchmarking. SAM is the vehicle that starts the journey from today's reality to future excellence.
The SAM Performance Indicators

- **Financial Perspective**
  - Facility Operating CRV Index
  - Facility Operating GSF Index
  - Facility Operating GIE Index
  - Capital Renewal Index
  - Facilities Condition Index
  - Needs Index

- **Internal Process Perspective**
  - Cycle Times
  - Average Age
  - Backlog
  - Energy Usage
  - Energy Reinvestment Index
  - Estimating Index
  - Project Soft Cost Index
  - Design Cost Index

- **Innovation and Learning Perspective**
  - Work Environment Index
  - High Score Index
  - Top Box-Bottom Box Index
  - Distribution Index

- **Customer Perspective**
  - Customer Satisfaction Index
  - High Score Index
  - Top Box-Bottom Box Index
  - Distribution Index
  - Weighting Index
  - Gap Analysis
The Strategic Assessment Model
Financial Perspective

The Financial Perspective reflects the organization's financial performance in ensuring financial integrity and demonstrates stewardship responsibility for capital and financial resources associated with the operation and preservation of physical assets throughout the campus. Financial performance indicators are tracked to ensure that services are delivered in an efficient cost-effective manner. The Financial Perspective is linked to the other perspectives through the relationships between cost and the results in achieving the other scorecard objectives. An example would be to understand how improving internal processes or customer satisfaction correlates with increasing or decreasing costs. Another might be to determine how financial benefits are derived from improvements in employee safety, absenteeism, and turnover. Primary services include those for operations and maintenance, energy and utilities, and planning, design, and construction. (Combines Baldrige categories 4.1, 4.2, and 7.2.)

Level Qualifying Criteria

5
A sound, systematic financial data collection, evaluation, and refinement program has been fully established that accomplishes overall financial perspective objectives.

Program collects financial performance indicators for all primary services. Specific services within broader primary services are being evaluated for individual service centers (lock shop, sign shop, zones, plumbing, etc.) and making improvements.

A strong fact-based improvement process is fully in place for reducing costs or improving services for all primary services. Emphasis is placed on refinement of previous improvements to make them even better. Cycles of improvement demonstrate a mature program of continuous improvements and refinements in primary services and have been sustained over several years.

Current financial performance is excellent for most primary services. No adverse trends are noted.

Most trends and/or service levels are evaluated against relevant comparisons or benchmarks from other similar institutions. Some are benchmarked with outside industries. Results show areas of leadership with excellent relative service levels.

4
A sound, systematic financial data collection, evaluation, and refinement program has been established that documents results in satisfying financial perspective objectives.

A fact-based improvement process is in place for reducing costs or improving services for all primary services. Cycles of improvement demonstrate a mature program of incremental improvements and refinements in making previous improvements even better.

Performance trends show cycles of cost or service improvement in many to most primary services. Most improvement trends and/or performance levels are sustained over cycles of data collection.

Current financial performance is good to excellent for most service activities. No adverse trends are noted.

Most trends and/or service levels are evaluated against relevant comparisons or benchmarks from similar institutions. Results show areas of leadership with very good relative service levels.

3
A sound, systematic financial data collection and evaluation program has been established to examine financial perspective objectives. Program collects and trends financial performance indicators for almost all service activities.

A fact-based improvement process is in place for reducing costs of most primary services. Performance trends show cycles of cost or service improvement in many to most primary services. Most improvement trends and/or performance levels are sustained over cycles of data collection.

Current financial performance for most service activities is good to excellent. No adverse trends are noted.

Most trends and/or service levels are evaluated against relevant comparisons or benchmarks from similar institutions. Results show areas of leadership with good to excellent relative service levels.
Emphasis is placed more on improvement than on reacting to problems. Improvements and cost savings can be measured and substantiated.

Performance trends show cost or service improvement in many to most primary services. No adverse trends are noted.

Some trends and/or service levels are evaluated against relevant comparisons or benchmarks from similar institutions. Results show areas of strength with good to very good relative service levels.

2 Beginnings of a systematic financial data collection program. May be tracking some financial indicators. Major gaps exist. Some primary financial indicators are not included.

Early stages of a transition from reacting to problems to a general improvement orientation with noted results. Financial trends show some improvements and/or good performance is noted for some primary services.

1 No systematic financial data collection program evident. Only anecdotal information is available on how well financial integrity and physical asset stewardship are satisfied.
Financial Perspective
Facility Operating Current Replacement Value (CRV) Index

Performance indicator:
Facility Operating Current Replacement Value (CRV) Index

Strategy for Selection:
Strategy for Selection: This indicator represents the level of funding provided for the stewardship responsibility of the institution's educational and general (E&G) capital assets. The indicator is expressed as a ratio of annual facility maintenance operating expenditure to Current Replacement Value (CRV).

Annual Facility Maintenance Operating Expenditures Defined:
Annual Facility Maintenance Operating Expenditures includes all expenditures to provide service and routine maintenance related to facilities and grounds used for E&G purposes. It also includes expenditures for major maintenance funded by the Annual Facilities Maintenance Operating Budget. This category does not include expenditures for major maintenance and/or capital renewal funded by other institutional accounts, nor does it include expenditures for utilities and institutional support services such as mail, telecommunications, public safety, security, motor pool, parking, environmental health and safety, central receiving, etc.

Current Replacement Value Defined:
Current Replacement Value (CRV) is defined as the total amount of expenditure in current dollars required to replace the institution's educational and general facilities to its optimal condition (excluding auxiliary facilities). It should include the full replacement cost for all buildings, grounds, utility systems, and generating plants. Furthermore, it would meet the current acceptable standards of construction, and comply with regulatory requirements. It is recommended that the average total project cost per square foot, multiplied by the gross square footage of educational and general buildings be used for the building portion of current replacement value. The cost to replace grounds, utilities and generating plant should also be include to the extent they support general educational facilities. There will likely require an apportionment of total replacement cost for these components that is consistent with the educational and general facilities they service and should exclude the auxiliary portion. Insurance replacement values or book values should not be used.

Equation:

\[
\frac{\text{Annual Facility Maintenance Operating Expenditures ($)}}{\text{Current Replacement Value ($)}}
\]
Financial Perspective

Facility Operating Gross Square Foot (GSF) Index

Performance indicator:
Facility Operating Gross Square Foot (GSF) Index

Strategy for Selection:
This indicator represents the level of funding provided for the stewardship responsibility of the institution's educational and general (E&G) capital assets. The indicator is expressed as a ratio of annual facility maintenance operating expenditure to the institutions gross square feet (GSF).

Annual Facility Maintenance Operating Expenditures Defined:
Annual Facility Maintenance Operating Expenditures includes all expenditures to provide service and routine maintenance related to facilities and grounds used for E&G purposes. It also includes expenditures for major maintenance funded by the Annual Facilities Maintenance Operating Budget. This category does not include expenditures for major maintenance and/or capital renewal funded by other institutional accounts, nor does it include expenditures for utilities and institutional support services such as mail, telecommunications, public safety, security, motor pool, parking, environmental health and safety, central receiving, etc.

Gross Square Feet Defined:
Gross Square Footage (GSF): Is the cumulative total of the institution's (educational and general) space on all floors of the building. Traditionally computed as the length times (Xs) the width using the outside faade of the exterior walls. Excluding the auxiliary enterprise square footage areas.

Equation:

\[
\frac{\text{Annual Facility Maintenance Operating Expenditures (\$)}}{\text{Gross Square Feet (GSF)}}
\]
Performance Indicator:
Facility Operating GIE Index

Strategy for Selection:
This indicator represents the level of funding provided for the stewardship responsibility of the institution’s educational and general (E&G) capital assets. The indicator is expressed as a ratio of annual facility maintenance operating expenditure to the institutions gross institutional Expenditures (GIE).

Annual Facility Maintenance Operating Expenditures Defined:
Annual Facility Maintenance Operating Expenditures includes all expenditures to provide service and routine maintenance related to facilities and grounds used for E&G purposes. It also includes expenditures for major maintenance funded by the Annual Facilities Maintenance Operating Budget. This category does not include expenditures for major maintenance and/or capital renewal funded by other institutional accounts, nor does it include expenditures for utilities and institutional support services such as mail, telecommunications, public safety, security, motor pool, parking, environmental health and safety, central receiving, etc.

Gross Institutional Expenditures Defined:
Gross Institutional Expenditures (GIE) is defined as the institutions total expenditures for educational and general purposes and excludes expenditures for all auxiliary functions.

Equation:

\[
\frac{\text{Annual Facility Maintenance Operating Expenditures (}$)}{\text{Gross Institutional Expenditures (GIE)}}
\]
Performance Indicator:
Capital Renewal Index

Annual Capital Renewal and Renovation/Modernization Expenditure as a Percent of Current Replacement Value (CRV)

Strategy for Selection:
This indicator was selected to show the institution's level of funding effectiveness in addressing its identified capital renewal and renovation/modernization needs. The numerator of this ratio is a total of the annual capital renewal expenditure and the annual renovation/modernization expenditure.

Annual Capital Renewal Expenditure:
Annual Capital Renewal Expenditures are all expenditures over and above facility maintenance operating budget expenditures required to keep the physical plant in reliable operating condition for its present use. These expenditures are over and above normal maintenance for items with a life cycle in excess of one year and are not normally contained in an annual facility operating budget. This is a separately funded, uniquely identified program that renews, replaces, or renovates building systems on a schedule based on life cycle recommendations and on assessment of expected remaining useful life. This is typically represented as a total expenditure for capital renewal of an institution's capital assets. Plant renewal focuses on maintaining the operability, suitability, and value of capital assets. It is accomplished through the replacement and rework of those components of a building that wear out even though those components are routinely maintained. Capital or plant renewal is a time-driven process with specific useful life cycles for heating and ventilation systems, etc. This often is provided in the form of capital funding for "major maintenance" before it becomes "deferred."

Current Replacement Value Defined:
Current Replacement Value (CRV) is defined as the total amount of expenditure in current dollars required to replace the institution's educational and general facilities to its optimal condition (excluding auxiliary facilities). It should include the full replacement cost for all buildings, grounds, utility systems, and generating plants. Furthermore, it would meet the current acceptable standards of construction, and comply with regulatory requirements. It is recommended that the average total project cost per square foot, multiplied by the gross square footage of educational and general buildings be used for the building portion of current replacement value. The cost to replace grounds, utilities and generating plant should also be include to the extent they support general educational facilities. There will likely require an apportionment of total replacement cost for these components that is consistent with the educational and general facilities they service and should exclude the auxiliary portion. Insurance replacement values or book values should not be used.

Equation:

\[
\text{Annual Capital Renewal and Renovation/Modernization Expenditure($) \over \text{Current Replacement Value ($)}}
\]
Financial Perspective
Facilities Condition Index

Performance Indicator:
Facility Condition Index

Strategy for Selection:
The Facilities Condition Index (FCI) is a comparative indicator of the relative condition of facilities. The F.C.I. is expressed as a ratio of the cost of remedying maintenance deficiencies to the current replacement value. The F.C.I. provides the facilities professional a method of measurement to determine the relative condition index of a single building, group of buildings, or the total facility (physical plant). This calculation also provides the facility professional a corresponding rule of thumb for the annual reinvestment rate (funding percentage) to prevent further accumulation of deferred maintenance deficiencies.

Deferred Maintenance Deficiencies Defined:
The total dollar amount of existing major maintenance repairs and replacements, identified by a comprehensive facilities condition audit of buildings, grounds, fixed equipment, and infrastructure needs. It does not include projected maintenance and replacements or other types of work, such as program improvements or new construction; these items are viewed, as separate capital needs.

Current Replacement Value Defined:
Current Replacement Value (CRV) is defined as the total amount of expenditure in current dollars required to replace the institution's educational and general facilities to its optimal condition (excluding auxiliary facilities). It should include the full replacement cost for all buildings, grounds, utility systems, and generating plants. Furthermore, it would meet the current acceptable standards of construction, and comply with regulatory requirements. It is recommended that the average total project cost per square foot, multiplied by the gross square footage of educational and general buildings be used for the building portion of current replacement value. The cost to replace grounds, utilities and generating plant should also be included to the extent they support general educational facilities. There will likely require an apportionment of total replacement cost for these components that is consistent with the educational and general facilities they service and should exclude the auxiliary portion. Insurance replacement values or book values should not be used.

Equation:

\[
\frac{\text{Deferred Maintenance Deficiencies ($)}}{\text{Current Replacement Value ($)}}
\]
Financial Perspective
Needs Index

Performance indicator:
Needs Index

Strategy for Selection:
Strategy for Selection: This performance indicator is expressed as a percentage. It is selected as an overall indicator of Campus Condition. Resource availability and utilization influence this condition.

Capital Renewal Needs Defined:
Capital Renewal Needs are the total amount of expenditures not including those associated with capital renewal of auxiliary facilities) that would be required to restore the campus to an optimal condition based on life cycle and assessed condition of facilities to adequately support programs. These expenditures would be beyond those allocated for routine maintenance and for items with a life cycle beyond one year and represents major maintenance that has become deferred.

Deferred Maintenance Needs Defined:
Deferred Maintenance Needs are the total amount of expenditures that would be required to perform maintenance projects that are not included in the capital renewal needs assessment and which were deferred as a result of unavailable resources or opportunity for scheduling.

Renovation and Modernization Needs Defined:
Renovation and Modernization Needs are the total amount of expenditures required to meet the evolving technological, programmatic or regulatory demands for the campus.

Current Replacement Value Defined:
Current Replacement Value (CRV) is defined as the total amount of expenditure in current dollars required to replace the institution’s educational and general facilities to its optimal condition (excluding auxiliary facilities). It should include the full replacement cost for all buildings, grounds, utility systems, and generating plants. Furthermore, it would meet the current acceptable standards of construction, and comply with regulatory requirements. It is recommended that the average total project cost per square foot, multiplied by the gross square footage of educational and general buildings be used for the building portion of current replacement value. The cost to replace grounds, utilities and generating plant should also be include to the extent they support general educational facilities. There will likely require an apportionment of total replacement cost for these components that is consistent with the educational and general facilities they service and should exclude the auxiliary portion. Insurance replacement values or book values should not be used.

Equation:

\[
\frac{\text{Capital Renewal+Deferred Maintenance+Renovation/Modernization (\$)}}{\text{Current Replacement Value (\$)}}
\]
The Strategic Assessment Model
Internal Processes Perspective

The Internal Processes Perspective addresses the key aspects of the organization's process evaluation for the delivery of primary services. These services would include those for operations and maintenance, energy and utilities, and planning, design, and construction. Examples of processes supporting these may include handling of work orders, procurement, billing, and relationships with suppliers. Evidence should show that processes for delivering services are efficient, systematic, and focused on customer needs. There is an emphasis on identifying opportunities for improvements and measuring results. The SAM performance indicators are intended to be representative measurements that apply to these processes. (Combines Baldrige categories 6.1, 6.2, 6.3, 7.4, and 7.5.)

Level Qualifying Criteria

5 A sound, systematic internal processes data collection, evaluation, and refinement program has been fully established that accomplishes overall internal processes perspective objectives.

Program collects internal process performance indicators for all primary services. Specific services within broader primary services are being evaluated for individual service centers (lock shop, sign shop, zones, plumbing, etc.) and making improvements.

A strong fact-based improvement process is fully in place for improving processes for all primary services. Emphasis is placed on refinement of previous improvements to make them even better. Cycles of improvement demonstrate a mature program of continuous improvements and refinements in primary services and have been sustained over several years.

Current internal process performance is excellent for most primary services. No adverse trends are noted.

Most trends and/or service levels are evaluated against relevant comparisons or benchmarks from other similar institutions. Some are benchmarked with outside industries. Results show areas of leadership with excellent relative service levels.

4 A sound, systematic internal processes data collection, evaluation, and refinement program has been established that documents results in satisfying internal processes perspective objectives.

A fact-based improvement process is in place for improving processes for all primary services. Cycles of improvement demonstrate a mature program of incremental improvements and refinements in making previous improvements even better.

Performance trends show cycles of cost or service improvement in many to most primary services. Most improvement trends and/or performance levels are sustained over cycles of data collection.

Current internal process performance is good to excellent for most service activities. No adverse trends are noted.

Most trends and/or service levels are evaluated against relevant comparisons or benchmarks from similar institutions. Results show areas of leadership with very good relative service levels.

3 A sound, systematic internal processes data collection and evaluation program has been established to examine internal processes perspective objectives. Program collects and trends internal process performance indicators for almost all service activities.
A fact-based improvement process is in place for reducing costs of most primary services. Emphasis is placed more on improvement than on reacting to problems. Improvements can be measured and substantiated.

Performance trends show improvement in many to most primary services. No adverse trends are noted.

Some trends and/or service levels are evaluated against relevant comparisons or benchmarks from similar institutions. Results show areas of strength with good to very good relative service levels.

2 Beginnings of a systematic internal process data collection program. May be tracking some internal process indicators. Major gaps exist. Some primary internal process indicators are not included.

Early stages of a transition from reacting to problems to a general improvement orientation with noted results. Internal process trends show some improvements and/or good performance is noted for some primary services.

1 No systematic internal process data collection program evident. Only anecdotal information is available on how well internal processes integrity and physical asset stewardship are satisfied.
Internal Process Perspective
Cycle Time

**Performance Indicator:**
Cycle Time

**Strategy for Selection:**
Cycle time is a measurement that can apply to many processes or meaningful process elements with a focus on completion time. It is an indicator of responsiveness and efficiency. Assessment of cycle time should call attention to how well processes are understood, repeated, and improved. Trending cycle time metrics with respect to goals and comparative benchmarks should become an essential strategic component of every process improvement program.

**Definition:**
Cycle time is the length of time that it takes to complete a process or a meaningful element of a process. The definition of "complete" and "a meaningful element" is non-prescriptive. Typical examples could include work order processes by priority category or trade, such as emergency and routine work requests. A meaningful element within that process might be the time to prepare an estimate for a customer or any other phase of a process requiring close examination.

**Equation:**

\[
\text{Completion Time} --- \text{Process Start Time}
\]
Internal Process Perspective
Average Age

Performance Indicator:
Average Age

Strategy for Selection:
Average age is an indicator of responsiveness and effectiveness in managing transactions within a process, such as uncompleted work orders, estimates or personnel actions. A low value for average age implies that transactions are completed within a short timeframe and that some priority is given to completing older transactions. The average age indicator has a built-in bias that encourages completing older transactions, i.e., those that have been within the process the longest, over newer ones.

Definition:
Average age is the average length of time that all transactions have been in a specific process and remain uncompleted.

Equation:

\[
\frac{\text{Total Ages of Uncompleted Transactions within a Process}}{\text{Total Number of Transactions}}
\]
Internal Process Perspective
Backlog

Performance Indicator:
Backlog

Strategy for Selection:
Backlog index is an indicator of productivity and resource allocation. It shows how well the organization is keeping up with the workload. Backlog may be influenced by several variables, some of which may be outside the control of the organization. Nevertheless, it signals a need for attention with respect to potential process improvement and can have a correlation to other performance indicators.

Definition:
Backlog index is the number of staff-hours required for completing open work orders or transactions normalized by the total number of staff-hours that are available to work on the backlog on an annual basis. It is generally represented as a percent of total payroll hours for a year. The number of staff-hours required for accomplishing all uncompleted work is calculated by totaling the estimated time that will be needed for every open transaction. Staff F.T.E is the number of staff who would normally be assigned to the type of work in backlog status. Use the normal work hours for an F.T.E. for standard comparative purposes, which is typically 2080 hours annually for most institutions.

Equation:

\[
\frac{\text{Total Number of Staff-Hours in Backlog Status}}{\text{Total F.T.E.} \times \text{Normal Hours (typically 2,080)}}
\]
Internal Process Perspective
Energy Usage

Performance indicator:
Energy Usage

Strategy for Selection:
This performance indicator is expressed as a ratio of BTUs for each GSF of facility. The purpose of selecting this indicator is that it represents a universal energy consumption metric that is commonly considered a worldwide standard. This energy usage metric can be tracked over a given period of time to measure changes and variances of energy usage. Major factors that effect BTU per gross square foot are outside ambient temperature, building load changes, and equipment efficiencies.

Definition:
The amount of energy it takes for heating, cooling, lighting and equipment operation per gross square foot. The indicator is traditionally represented as total energy consumed annually or monthly. All fuels and electricity are converted to their respective heat, or BTU content, for the purpose of totaling all energy consumed.

Equation:

\[
\frac{\text{British Thermal Units (BTUs)}}{\text{Gross Square Feet}}
\]
**Internal Process Perspective**

**Energy Reinvestment Index**

**Performance indicator:**
Energy Reinvestment Index

Energy Efficiency Index (E.F.I.)

**Strategy for Selection:**
This indicator is expressed as a percentage of the annual expenditure for energy conservation and efficiency efforts as compared to the total annual energy expenditures. This performance indicator was selected to emphasize processes and programs for investing resources to save energy. It establishes an accountability reference of energy stewardship and reflects comprehensive institutional planning with regards to overall energy efficiency planning.

**Definition:**
The indicator includes all expenditures for new, replacement or retrofit equipment, devices, and modifications that can be justified by cost savings in energy usage over the life of the equipment installed or retrofitted. Energy conservation efforts are generally considered to be environmentally friendly and have an associated "payback" period. Energy conservation costs need to be expressed in dollars spent in the given annual year for total energy conservation expenditures and include total labor, supplies, transportation, and other special conditions for installation. Energy Reinvestment Index can be averaged over several years to accommodate unusually large, one-time projects that would otherwise distort a multi-year trend.

**Equation:**

\[
\text{Annual Expenditure on Energy Efficiency Measures \times 100}
\]

\[
\text{Annual Institution Energy Expenditure}
\]
Internal Process Perspective
Estimating Index

Performance Indicator:
Estimating Index

Strategy for Selection:
The purpose of the estimating index is to measure the accuracy and credibility of the estimate as compared to actual work accomplished. The index is usually used for measuring performance for projects or reimbursable work orders. Different size projects may be accomplished so differently that they may be grouped into several categories with an estimating index calculated for each. Deviations outside of a reasonable range of values should be examined for opportunities to learn and improve the estimating process. The use of this indicator should also encourage field personnel to be innovative in reducing actual time and costs. As with any cycles of improvement, consistent performance above or below 1.00 will indicate that the estimates are no longer credible and that the estimates need to be adjusted to reflect the actual level of productivity.

Definition:
Estimating index is the ratio of actual time or costs to do work divided by estimated time or costs. The unit of measurement should be the same for both actual and estimated. Time is usually measured in days and costs are usually measured in whole dollars. When measuring the average performance over a period of time, such as monthly, the number of samples can vary so long as they contain a representative mix to provide reasonable accuracy. The index is usually represented as a decimal number. The estimating index will be greater than 1.00 when the actual time or costs exceeds the estimate. Similarly, the estimating index will be less than 1.00 when the actual time or costs is less than the estimate.

Equation:

\[
\text{Actual Time or Costs} \quad \frac{\text{---}}{\text{Estimated Time or Costs}}
\]
Performance Indicator:
Project Soft Cost Index

Strategy for Selection:
The purpose of this performance indicator is to determine the percent of soft costs in a project. A smaller percentage implies a more efficient use of project funds. The performance indicator can be used to determine how efficiently project funds are utilized for individual projects or to trend cumulative results and variances for numerous projects over time.

Definition:
These costs are related to those items in a project that are necessary to prepare and complete the non-construction needs of the project. Soft costs include such items as architecture, design, engineering, permits, inspections, consultants, environmental studies, and regulatory demands needing approval before construction begins. Soft costs do not include construction, telecommunications, furnishings, fixed equipment, and expenditures for any other permanent components of the project.

Equation:

\[
\frac{\text{Soft Costs}}{\text{Adjusted Total Actual Project Cost}}
\]
Internal Process Perspective
Design Costs Index

**Performance Indicator:**
Design Costs Index

**Strategy for Selection:**
The purpose of this performance indicator is to determine the percent of architecture & engineering design costs in a project. A smaller percentage implies a more efficient use of project funds. The performance indicator can be used to determine how efficiently project funds are used for individual projects or to trend cumulative results and variances for numerous projects over time.

**Definitions:**
Architecture & Engineering costs represent all actual costs charged by the architecture and engineering firms to a project. Total Actual Project Costs represent the total actual project cost to complete and close a project. The important factor is that ALL projects measured are represented in the numerator and the denominator. While the number of projects can vary, a representative number of projects over a reasonable period of time are the best guideline.

**Equation:**

\[
\frac{\text{Architecture & Engineering Actual Costs} \times 100}{\text{Total Actual Project Costs}}
\]
The Strategic Assessment Model
Innovation and Learning Perspective

The Innovation and Learning Perspective addresses key practices directed toward creating a high performance workplace and a learning organization. In a learning organization people at all levels, individually and collectively, are continually increasing their knowledge and capacity to produce the best practices and possible results. The perspective considers how the organizational culture, work environment, employee support climate, and systems enable and encourage employees to contribute effectively. Work environment and systems include work and job design, compensation, employee performance management, and recognition programs. Training is analyzed in how well it meets ongoing needs of employees and develops their leadership and knowledge sharing skills to improve efficiency and accommodate change. There is an emphasis on measuring results relating to employee well being, satisfaction, development, motivation, work system performance, and effectiveness. (Combines Baldrige categories 5.1, 5.2, 5.3, and 7.3.)

Level Qualifying Criteria

5
A sound, systematic innovation and learning data collection, evaluation, and refinement program has been fully established that accomplishes overall innovation and learning perspective objectives.

Program collects innovation and learning performance indicators for all work environment and systems. Specific services within broader work environment and systems are being evaluated for individual service centers (lock shop, sign shop, zones, plumbing, etc.) and making improvements.

A strong fact-based improvement process is fully in place for improving processes for all work environment and systems. Emphasis is placed on refinement of previous improvements to make them even better. Cycles of improvement demonstrate a mature program of continuous improvements and refinements in work environment and systems and have been sustained over several years.

Current innovation and learning performance is excellent for most work environment and systems. No adverse trends are noted.

Most trends and/or service levels are evaluated against relevant comparisons or benchmarks from other similar institutions. Some are benchmarked with outside industries. Results show areas of leadership with excellent relative service levels.

4
A sound, systematic innovation and learning data collection, evaluation, and refinement program has been established that documents results in satisfying innovation and learning perspective objectives.

A fact-based improvement process is in place for improving processes for all work environment and systems. Cycles of improvement demonstrate a mature program of incremental improvements and refinements in making previous improvements even better.

Performance trends show cycles of cost or service improvement in many to most work environment and systems. Most improvement trends and/or performance levels are sustained over cycles of data collection.

Current innovation and learning performance is good to excellent for most work environment and systems. No adverse trends are noted.

Most trends and/or service levels are evaluated against relevant comparisons or benchmarks from similar institutions. Results show areas of leadership with very good relative service levels.
A sound, systematic innovation and learning data collection and evaluation program has been established to examine innovation and learning perspective objectives. Program collects and trends innovation and learning performance indicators for almost all service activities.

A fact-based improvement process is in place for improving most work environment and systems. Emphasis is placed more on improvement than on reacting to problems. Improvements can be measured and substantiated.

Performance trends show improvement in many to most work environment and systems. No adverse trends are noted.

Some trends and/or service levels are evaluated against relevant comparisons or benchmarks from similar institutions. Results show areas of strength with good to very good relative service levels.

Beginnings of a systematic innovation and learning data collection program. May be tracking some innovation and learning indicators. Major gaps exist. Some primary innovation and learning indicators are not included.

Early stages of a transition from reacting to problems to a general improvement orientation with noted results. Innovation and learning trends show some improvements and/or good performance is noted for some work environment and systems.

No systematic innovation and learning data collection program evident. Only anecdotal information is available on how well innovation and learning perspective objectives are satisfied.
Innovation and Learning Perspective
Work Environment Index

Performance indicator:
Work Environment Index

Strategy for Selection:
The Work Environment Index is the average of all scores reported on an Work Environment survey. It is the blend of delighted to dissatisfied employees. Its strength is that it is a concise summary of all responses. Its weakness is that it communicates less about the nature of satisfaction than other indices. The average score does not represent any one person or group within the whole. It is not as useful an index as others for understanding the dynamics of the workplace environment. It does not forecast what future satisfaction levels may be without intervention. The component parts that construct this overall average need to be understood in order to build an effective action plan for improvement. Therefore, the Overall Satisfaction index needs to be used in conjunction with one or more other indices described in this model.

Work Environment Index Defined: This index is the overall average of all responses made by all survey respondents. It is most accurate to calculate the average by summing the value of all responses and dividing the sum by the number of responses. It is less accurate to calculate the figure by striking intermediary averages, e.g., the average by survey form, summing the intermediary averages and dividing by their number to arrive at an overall average.

Equation:

\[
\frac{\text{Total of survey answers values}}{\text{Total number of survey answers}}
\]
Innovation and Learning Perspective
High Score Index

Performance indicator:
High Score Index

Strategy for Selection:
The High Score index is expressed as a percent. It is selected as an indicator of the size of the employee population that is delighted with the workplace environment. Assuming that the effective survey instruments are used, this index can identify some best in class organizations. This metric can be used for the overall facilities organization, its internal departments, or its work units.

High Score Index Defined:
This is the percent of survey responses scored at the top/highest level of satisfaction. It is calculated by dividing the number of top/highest satisfaction responses by the total number of responses at all levels. Questions which are not answered are excluded from the count.

Equation:

\[
\frac{\text{Total Number of survey question responses at top level}}{\text{Total Number of survey questions answered}}
\]
Innovation and Learning Perspective
Top Box-Bottom Box Ratio

Performance indicator:
Top Box-Bottom Box Ratio

Strategy for Selection:
The Top Box-Bottom Box index shows balance (or imbalance) between employees who are in the "more than satisfied" to "delighted" range and employees who are in the "less than satisfied" to "dissatisfied" range. Persons who evaluate in the middle and "straddle the fence" are excluded from the calculation.

Scores higher than the middle are in the "Top Box". Ideally, all employees would score in the Top Box. Scores lower than the middle are in the "Bottom Box". Ideally, no employees would score in the Bottom Box. As a guideline, there should be at least two employees in the Top Box for every one employee in the Bottom Box (2/1). Even that ratio would produce a discordant workplace environment.

Often the Top Box-Bottom Box index starts to change before the overall average is affected, so it can be a precursor of the future overall satisfaction trend.

Top Box-Bottom Box Index Defined:
The number of responses scored higher than the middle of the scale are divided by the number of responses scored lower than the middle of the scale. Unanswered questions and scores in the middle of the scale are excluded from the index. It is more accurate to construct the ratio for each level of reporting rather than to strike intermediary ratios and then average those ratios for roll-up reports.

Equation:

\[
\frac{\text{Number of scores higher than the middle}}{\text{Number of scores lower than the middle}}
\]
Performance indicator:
Distribution Index

Strategy for Selection:
The Distribution index shows the spread of employee scores along the whole range of the evaluation scale. The distribution is expressed as percentages. This index can provide an evaluation profile at the question level, survey subject level, or for the overall survey.

The Distribution percentages provide information that other indices do not. For instance, on a scale of 5, the Satisfaction average of 3.3 can be calculated from two very different distributions: (1) more persons evaluating at the highest extreme than those evaluating at the lowest extreme, or (2) a few persons evaluating higher than the middle and the rest scoring in the middle of the scale. This is important information because the action plan for opposite extremes would be different from one addressing a content (albeit not delighted) employee base.

Distribution Index Defined:
This index calculates the percent of responses entered for each level of the evaluation scale, e.g., the percent evaluating at level 1 "dissatisfied", the percent evaluating at level 2 "less than satisfied", etc. The Index can be calculated at the question level, the subject or unit level, and/or for the overall survey. Normally there also is a percentage for No Responses at the question level. It is most accurate to calculate the Index for each report level rather than rolling up and averaging the percents.

Equation:

\[
\text{Number of responses to a question at a score level} \\
\text{---------------------------------} \\
\text{Number of responses for the question}
\]
Customer Perspective

The Customer Perspective addresses how your organization determines requirements, expectations, and preferences of customers to ensure relevance of current services and to develop new opportunities; builds relationships with customers; and measures results of customer satisfaction and performance of services. Primary customer groups include faculty, staff, students, customer representatives and decision-makers for customer departments, and other significant stakeholders. Primary services would include those for operations and maintenance, energy and utilities, and planning, design, and construction. (Combines Baldrige categories 3.1, 3.2, and 7.1.)

Level Qualifying Criteria

5 A sound, systematic customer data collection, evaluation, and refinement program has been fully established that accomplishes overall customer perspective objectives.

Program collects feedback from all primary customer groups and includes point of service surveys for all primary services. Specific services within broader primary services are being evaluated for individual service centers (lock shop, sign shop, zones, plumbing, etc.) and making improvements.

A strong fact-based improvement process is fully in place for all primary services. Emphasis is placed on refinement of previous improvements to make them even better. Cycles of improvement demonstrate a mature program of continuous improvements and refinements in primary services and have been sustained over several years.

Current performance is excellent for most primary services. No adverse trends are noted.

Most trends and/or service levels are evaluated against relevant comparisons or benchmarks from other similar institutions. Some are benchmarked with outside industries. Results show areas of leadership with excellent relative service levels.

4 A sound, systematic customer data collection, evaluation, and refinement program has been established that documents results in satisfying customer perspective objectives.

Program collects feedback from all primary customer groups and for all primary services.

A fact-based improvement process is in place for all primary services. Cycles of improvement demonstrate a mature program of incremental improvements and refinements in making previous improvements even better.

Performance trends show cycles of improvement in many to most primary services. Most improvement trends and/or performance levels are sustained over cycles of data collection.

Current performance is good to excellent for most service activities. No adverse trends are noted.

Most trends and/or service levels are evaluated against relevant comparisons or benchmarks from similar institutions. Results show areas of leadership with very good relative service levels.

3 A sound, systematic customer data collection and evaluation program has been established to examine customer perspective objectives. Program collects data from most customer groups and for almost all service activities.

A fact-based improvement process is in place for most primary services. Emphasis is placed more on improvement than on reacting to problems. Improvements and customer satisfaction can be measured and substantiated.

Performance trends show improvement in many to most primary services. No adverse trends are noted.
Some trends and/or service levels are evaluated against relevant comparisons or benchmarks from similar institutions. Results show areas of strength with good to very good relative service levels.

2 Beginnings of a systematic customer data collection program. May survey certain groups of customer base and/or conduct point of service surveys for some service activities. Major gaps exist. Some primary customer groups and/or service activities are not included.

Early stages of a transition from reacting to problems to a general improvement orientation with noted results. Trends show some improvements and/or good performance is noted for some primary services.

1 No systematic customer data collection program evident. Only anecdotal information is available on how well customer needs are being identified and satisfied.
Customer Perspective
Customer Satisfaction Index

Performance Indicator:
Customer Satisfaction Index

Strategy for Selection:
Customer satisfaction information is key knowledge and a critical success factor. This particular index shows the blend of delighted to dissatisfied customers. It is the statistic that higher management expects to see and the index most used in strategic planning and goal setting. Its strength is that it is a concise summary of all responses. Its weakness is that it communicates less about the nature of satisfaction than other indices. The average score does not represent any one person or group within the whole. It is not as useful an index as others for understanding the dynamics of satisfaction. It does not forecast what future satisfaction levels may be without intervention. The component parts that construct this overall average need to be understood in order to build an effective action plan for improvement. Therefore, the Customer Satisfaction index needs to be used in conjunction with one or more other indices described in this model.

Customer Satisfaction Index Defined:
This index is the overall average of all responses made by all survey respondents. It is most accurate to calculate the average by summing the value of all responses and dividing the sum by the number of responses. It is less accurate to calculate the figure by striking intermediary averages, e.g., the average by survey form, summing the intermediary averages and dividing by their number to arrive at an overall average.

Equation:

\[
\frac{\text{Total of ranking points}}{\text{Total number of survey answers}}
\]
Customer Perspective
High Score Index

Performance Indicator:
High Score Index

Strategy for Selection:
This is an indicator of the size of the customer population that is delighted with the service levels of the function or unit being evaluated. Assuming that the effective survey instruments are used, this index can identify some best in class organizations. This metric can be used for the overall campus community or its segments and be reflective of the whole facilities organization or its work units.

High Score Index Defined:
This is the percent of survey responses scored at the top/highest level of satisfaction. It is calculated by dividing the number of top/highest satisfaction responses by the total number of responses at all levels. Questions which are not answered are excluded from the count.

Equation:

\[
\frac{\text{Total number of survey question responses at top level}}{\text{Total number of survey questions answered}}
\]
Customer Perspective
Top Box-Bottom Box Index

Performance Indicator:
Top Box-Bottom Box Index

Strategy for Selection:
The Top Box-Bottom Box index shows balance (or imbalance) between customers who are in the "more than satisfied" to "delighted" range and customers who are in the "less than satisfied" to "dissatisfied" range. Persons who evaluate in the middle and "straddle the fence" are excluded from the calculation.

Scores higher than the middle are in the "Top Box". Ideally, all customers would score in the Top Box.
Scores lower than the middle are in the "Bottom Box". Ideally, no customers would score in the Bottom Box. As a guideline, there should be, at a minimum, two customers in the Top Box for every one customer in the Bottom Box (2/1). Units that fall below the 2/1 ratio need to take positive actions to improve customer evaluations.

Often the Top Box-Bottom Box index starts to change before the overall average is affected, so it can be a precursor of the future overall satisfaction trend.

Top Box-Bottom Box Index Defined:
The number of responses scored higher than the middle of the scale are divided by the number of responses scored lower than the middle of the scale. Unanswered questions and scores in the middle of the scale are excluded from the index. It is more accurate to calculate the index for each level of reporting rather than to strike intermediary ratios and then average those ratios for roll-up reports.

Equation:

\[
\frac{\text{Number of scores higher than the middle}}{\text{Number of scores lower than the middle}}
\]
Customer Perspective
Distribution Index

Performance Indicator:
Distribution Index

Strategy for Selection:
The Distribution index shows the spread of customer scores along the whole range of the evaluation scale. The distribution is expressed as percentages. This index can provide an evaluation profile at the question level, survey subject level, or for the overall survey.

The Distribution percentages provide information that other indices do not. For instance, on a scale of 5, the Satisfaction average of 3.3 can be calculated from two very different distributions: (1) a few more persons evaluating at the highest extreme than those evaluating at the lowest extreme, or (2) a few persons evaluating higher than the middle and the rest scoring in the middle of the scale. This is important information because the action plan for opposite extremes would be different from one addressing a content (albeit not delighted) customer base.

Distribution Index Defined:
This index calculates the percent of responses entered for each level of the evaluation scale, e.g., the percent evaluating at level 1 "dissatisfied", the percent evaluating at level 2 "less than satisfied", etc. The Index can be calculated at the question level, the subject or unit level, and/or for the overall survey. Normally there also is a percentage for No Responses at the question level. It is most accurate to calculate the Index for each report level rather than rolling up and averaging the percents.

Equation:

\[
\frac{\text{Number of responses to a question at a score level}}{\text{Number. of responses for the question}}
\]
Performance Indicator:
Weighting Index

Strategy for Selection:
Most surveys give equal weight to each question in the survey which assumes that each aspect of operations is equally important to the customers performing the evaluations. We know that this is not a valid assumption, but one taken because the survey instrument needs to be more complex to consider the importance factor.

Survey questions address attributes of service, e.g., cost and value, dependability, accuracy, etc. A survey can enable the customer to indicate the relative importance of the attributes being evaluated. The survey scores then are weighted by relative importance to disclose what needs to be at the top of the heap for attention and what strong performance areas need to be protected.

Weighting Index Definition:
The Weighting Index multiplies the relative importance of a service attribute against the score awarded to a question addressing that attribute. In this form of survey, it is preferable to assign negative values to responses below the middle so that the weighting doesn't mask answers of less than satisfactory or dissatisfied.

Equation:

\[ \text{Attribute Survey scores} \times \text{Attribute Weighting factor} \]
Customer Perspective
Gap Analysis

Performance Indicator:
Gap Analysis

Strategy for Selection:
We delight a customer when we meet or exceed his/her expectations. If they expect less than perfection, we may be delighting them without knowing it when they evaluate our services as less than perfect.

It is likely that the customers are realistic about some services and very demanding about others. Knowing this allows facilities to invest resources in the areas where expectations are the highest. Once expectations are known, the gap between the levels of service expected and the levels of service delivered can be measured. Negative gaps need to be addressed by improving the service levels and/or influencing expectations by very effective communications about circumstances affecting service levels.

Gap Index Definition:
The Gap Index is the difference between the level of service that the customer expects to receive versus the level of service that the customer evaluates as received. For example, if a customer evaluates a certain service at a 4 level "more than satisfactory" while they expect service to be delivered at a 3 "satisfactory" level, there is a positive gap. If their expectation is higher at the 5 "excellence" level, there is a negative gap.

Equation:

Service evaluation level ---- Service expectation level